California Energy Commission

Geothermal Program
Geothermal Resources Development Account (GRDA)
Solicitation Workshop

January 24, 2011
3:00 – 5:00 p.m.

Brawley Inn Hotel and Conference Center
575 W. Main Street
Brawley, California

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Presentation Outline

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Background

The CEC was created in 1974 by the California Legislature as the State's primary energy policy and planning agency.

The CEC has five major responsibilities:

- **Forecasting future energy needs and keeping historical energy data**
- **Licensing thermal power plants 50 MW or larger**
- **Promoting energy efficiency through appliance and building standards**
- **Planning for and directing state response to energy emergencies**
- **Developing energy technologies and supporting renewable energy. The Geothermal Program is just one of several venues for renewable energy research and development.**

Geothermal Program Overview

The mission of the Geothermal Program is to promote the research, development, demonstration, and commercialization of California's enormous geothermal energy resources.

In the last 30 years the Geothermal Program has cost-shared in research, development and demonstration partnerships with over 170 public and private entities through the Geothermal Resources Development Account (GRDA)

Geothermal Program Overview (cont.)

Policy Drivers:

- **Renewable Portfolio Standards goals, Integrated Energy Policy Report, Energy Action Plan, etc.**
- **AB 32 Global Warming Act 2006, 2020 GHG reduction goals, etc.**

Infrastructure Challenges:

- **Insufficient generating capacity to accommodate projected growth**
- **Transmission and distribution congestion especially in high-demand centers like Los Angeles, San Francisco, and Silicon Valley**
- **Requirement to increase the renewable energy sources into the energy mix to reduce air pollution and emission of greenhouse gases**
- **Lack of diversified renewable energy portfolio, generation and integration systems**

GRDA Establishment and Purpose

The California Legislature established the Geothermal Program in 1980 under Public Resources Code section 3800 et seq. It also created the Geothermal Resources Development Account (GRDA) as the source of funding to promote the development of new or existing geothermal resources and technologies.

Funds for GRDA come from revenues paid to the United States government by geothermal developers for leases on federal land in California.

GRDA Opportunity Notice

- **Practically all aspects of geothermal research, development, demonstration, planning and mitigation are eligible for funding**
- **Up to $6.8M available for GRDA grants**
- **GRDA funding will be divided into three Project Categories:**

  1) Resource Development, 2) Planning, and 3) Mitigation. Each will be allocated 25% ($1.7M) of the available $6.8M
- **No limit on funding that can be requested per project, although allocation of GRDA funds to Project Categories may constrain the overall amount available in each Category. Remaining funds will be allocated to any of the Project Categories at sole discretion of the Energy Commission**
- **Proposals will be placed in rank order within each Project Category**
- **Proposals will be ranked beginning with the 1st ranked of each Project Category**

GRDA Project Categories

- **Resource Development Projects: activities that assess, develop, and/or convert a geothermal resource for direct use or electrical generation**
- **Planning Projects: activities that regulate and/or guide the development and use of geothermal resources**
- **Mitigation Projects: activities that identify the adverse environmental impacts, and/or implement measures to reduce or eliminate those impacts due to geothermal development**

GRDA Project Categories

Resource Development Projects may include, but not limited to:

- **Demonstration or commercialization of geothermal technologies**
- **Resource assessment, including geological, hydrological, geophysical, and geochemical studies**
- **Evaluation, drilling and testing of exploration, production and injection wells**
- **Electricity production**
- **Develop direct-use projects, including space heating/domestic water supply, aquaculture, or industrial process heat**

GRDA Project Categories (cont.)

Planning Projects may include, but not limited to:

Collection and analysis of environmental data

- **Note: Activities related to data collection, for regulatory compliance, such as CEQA certification, EIRs, drilling or construction permits are ineligible for GRDA funding**

GRDA Project Categories (cont.)

Mitigation Projects may include, but not limited to:

- **Identification and control of adverse impacts to water, air, wildlife, vegetation, viewshed, ground surface levels, and ambient noise levels**
- **Environmental enhancement**
- **Identification of social and economic impacts of geothermal development**

GRDA Eligibility

- **Private entities include individuals and private for-profit organizations**
- **Local jurisdictions include cities, counties, school districts, and special districts, regional planning agencies and public utility districts**
  - **Exception: Any public utility that generates more than 50MW of electricity for sale is not eligible to apply for GRDA funding as the primary applicant**
- **Universities, national laboratories, and not-for-profit organizations may be eligible for funding only in partnership with a local jurisdiction or private for-profit entity**

GRDA Match Requirements

Private for-Profit Entities: Match share of at least 50% of the total project cost

Local Jurisdictions: Match share must be at least 20% of the total project cost

- **Exception: Local Jurisdictions located in a county that has received County-of-Origin funds from GRDA > $50,000 in each of the previous three years must provide a Match Share of at least 50% of the total project cost**

GRDA Match Requirements (cont.)

- **A Match Share is required of all applicants**
- **Prior investments do not qualify as Match Share**
- **Match Share may be: cash, equipment, +/or in-kind services**
- **Match Share for equipment:**
  - **Equipment must be dedicated to the project for the duration of the grant**
  - **Equipment value must be based on documented, and current market costs**
  - **Equipment may be depreciated or amortized over the project's life**

California Environmental Quality Act (CEQA)

If land-use development is involved, CEQA may apply.

Proposal should indicate whether the project is subject to CEQA stipulations.

- **If CEQA does not apply, explain why**
- **If CEQA does apply, provide a description of the stage reached in CEQA compliance, or provide documentation of permits and conditions that have been issued or will be issued**
- **CEQA compliance may be a lengthy process. CEQA Information: http://ceres.ca.gov/topic/env_law/ceqa/guidelines**

Prevailing Wage

Any project classified as public works under Department of Industrial Relations (DIR) guidelines must pay prevailing wage. Typical activities include:

- **Cement work**
- **Site preparation, such as grading**
- **Surveying**
- **Wiring**
- **Any skilled trades**

If unsure, have a determination made by DIR:
http://www.dir.ca.gov/DLSR/statistics_research.html#PWD

GRDA Application Screening

Administrative Screening

- **Eligibility**
- **Completeness**
- **Application Content**

GRDA Application Screening (cont.)

Eligibility

- **Proposals must be geothermally related**
- **Projects must be located in California**
- **Applicant must be eligible to apply for GRDA funding**
- **Proposal must provide the adequate Match Funds**
- **Proposal must address GRDA Solicitation Administrative requirements and Scoring Criteria**

GRDA Application Screening (cont.)
Completeness

- **Applicant must specify only one GRDA Project Category in the Pre-Application and the Final Application**
- **Proposals should provide source of Match Funds**
- **Proposals containing confidential material or information will be rejected**
- **Proposals should provide CEQA status**
- **Proposals should provide Prevailing Wage status**
- **Proposal must follow the guidelines in the GRDA Solicitation Manual**
- **One proposal per project**

GRDA Application Screening (cont.)
Application Content

- **Pre-Application Content (see GRDA Manual pp. 15-17)**
  - **Application and Project Information Form *(Exhibit F)***
  - **Project Category Selection Form *(Exhibit G)***
  - **Project Budget *(Exhibit B; Pre-Application Summary Budget)***
  - **Project Description *(max. 5 pages)***
  - **Work Statement *(max. 3 pages for Technical Tasks; see Exhibit A)***
  - **CEQA Compliance *(if applicable)***
- **Final Application Content (see GRDA Manual pp. 18)**
  - **Application and Project Information Form *(Exhibit F)***
  - **Project Category Selection Form *(Exhibit G)***
  - **Project Budget *(Exhibit B; Final Application Detailed Budget)***
  - **Project Description *(max. 10 pages)***
  - **Work Statement *(max 10 pages for Technical Tasks; see Exhibit A)***
  - **Work Schedule**
  - **Product Description**
  - **Resolution *(if applicable)***
  - **CEQA Compliance *(if applicable)***
  - **Prevailing Wage *(if applicable)***

GRDA Application Scoring

Technical Review

- **Merit of the proposal will be evaluated and scored on the basis of the information submitted in the administrative, budget and technical sections**
- **Proposals should provide clear, logical and concise Project Description, Work Statement and Budget**
- **Proposals should identify economic and technical goals**
- **Proposals should provide mass balance and energy balance analysis and diagrams, or similar schematics to describe methodologies or technologies**
- **Proposals should provide references to past related work and results obtained from previous studies, research, etc.**
- **Proposals should disclose participation in previous CEC or Department of Energy funded projects**

GRDA Application Scoring (cont.)

Overriding Issues

This Solicitation will provide preferential scoring for topics that are of particular interest to accelerate the development of geothermal resources as listed under the "Overriding Issues" Scoring Criteria.

GRDA Application Scoring (cont.)

Overriding Issues

Possible approaches may include, but are not limited to:

- **Subsurface heat exchanger of multilateral wells that control heat or fluid flow**
- **Combined solar-geothermal, or other hybrid combined systems**
- **Reduce O and M costs of wells and power plants**
- **Energy extraction from resources with progressively lower permeability and fluid content, or from lower temperature resources**
- **Corrosion technologies of geothermal fluids**
- **Hybrid configuration of water-cooled and air-cooled cooling towers**
- **Waste heat recovery from new or existing facilities for electricity generation or direct use applications**
- **Geothermal power co-production from oil and gas fields**

GRDA Application Scoring (cont.)
Overriding Issues

Potentially useful technologies may include, but are not limited to:

- **"Smart" tools that sense and respond to drilling and development conditions**
- **Geological, geophysical, or geochemical or remote sensing technologies that characterize, identify and map resources**
- **Strategies that improve the long-term performance and stabilization of system pressure**
- **Extraction of fluids at higher energy densities including supercritical**
- **Use unproductive reservoirs for enhanced geothermal systems**
- **Resource exploration and assessment, permeability detection, mapping and well siting, resource drilling, and well completion.**
- **Multidisciplinary approaches for improved projections of reservoir evolution and management options**

GRDA Application Scoring (cont.)

Overriding Issues

Approaches for improving environmental compatibility may include, but are not limited to:

- **Removal and disposal of H_2S and/or non-condensable gases**
- **Extraction technologies to include Li, Mn, Cu and other economically valuable resources**
- **Characterize, predict, or minimize seismicity resulting from EGS or conventional geothermal development**

GRDA Application Scoring (cont.)

Scoring Criteria: Resource Development

Economic and Employment Benefits	**15 points**
Demonstration Value	**15 points**
Payback and Cost Effectiveness	**15 points**
Resource	**15 points**
Likelihood of Success	**15 points**
Match Contribution	**15 points**
Overriding Issues	**30 points**
TOTAL POSSIBLE	**120 points**
PASSING SCORE	***80 points***

GRDA Application Scoring (cont.)

Scoring Criteria: Planning

Demonstrated Need	**15 points**
Stimulation of Geothermal Energy Dev.	**15 points**
Proven Extent of the Resource	**15 points**
Implementation	**15 points**
Public Involvement	**15 points**
Match Contribution	**15 points**
Overriding Issues	**30 points**
TOTAL POSSIBLE	**120 points**
PASSING SCORE	***80 points***

GRDA Application Scoring (cont.)

Scoring Criteria: Mitigation

Documented Impact	**15 points**
Demonstrated Need	**15 points**
Availability of Alternatives to Mitigate	**15 points**
Timeliness	**15 points**
Likelihood of Success	**15 points**
Match Contribution	**15 points**
Overriding Issues	**30 points**
TOTAL POSSIBLE	**120 points**
PASSING SCORE	***80 points***

Solicitation Schedule

Release of GRDA Solicitation	**January 5, 2011**
Conduct Solicitation Workshop	**January 18, and 24, 2011**
Post Questions & Answers on Energy Commission Website	**January 31, 2011**
Submit complete Pre-Application	**February 22, 2011 4:00 p.m.**
Mail comments on Pre-Applications	**March 7, 2011 (est.)**
Submit a complete Final Application	**April 21, 2011, 4:00 p.m.**
Post Notice of Proposed Awards	**May 19, 2011 (est.)**
Present at Commission Business Meeting	**June 29, 2011**

Mailing or Delivery Location

Geothermal Program Solicitation

Grants and Loans Office

California Energy Commission

1516 9th Street, MS-1

Sacramento, CA 95814-5512

Geothermal Program Website

Download the GRDA Solicitation Manual and Application Forms from the Commission website at:

www.energy.ca.gov/contracts/geothermal.html

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